

Study Findings

The Indiana Trails Study is a comprehensive review of trails, and significant amounts of data have been generated. Over 240 different variables were analyzed in the 4 different surveys and traffic counts completed between June and November 2000. The published study consists of 7 volumes, one each for the six (6) different trails studied, and this summary report of all trail research. The most complete and concise summary of data from the Indiana Trails Study is found in Appendix A of this report in the form of Trail Data Summary Tables. In this format, the findings from each of the six (6) trails studied are laid out side-by-side by topical area. The detailed analysis provided in the following summary report is based on the Trail Data Summary Tables.

Trail Use & Counts

In analyzing use patterns, the Trail Study utilized infrared traffic counters originally designed to track wildlife crossing at a specific point. The counters indicate date, and time of an “event” when the infrared light beam is crossed by a traveling object. The counters have a transmit and receiver unit that are mounted across from each other, and are adjustable so that object speed and size can be accommodated. In the case of the Trail Study, the counters were placed in one location along each of the trails over a 2-month period of September and October 2000.

It is emphasized that the trail counters recorded only “events”, not separate and distinct users, and could not ascertain the activity in which the user was participating. (i.e. walking, bicycling, etc.). In this way, the infrared trail counters acted much the same as traffic counters used by civil and traffic engineers in measuring use of a specific stretch of highway. The counters measured only the number of events or users that passed by a specific point along each trail.

It is important to note that the trail count study was augmented by work completed by the School of Public and Environmental Affairs at Indiana University Purdue University Indianapolis (IUPUI) where an undergraduate class conducted research designed to estimate the accuracy of the trail counters. By observing activities on the nearby Monon Trail in Indianapolis during specific times in the same location as the infrared counter, this project determined that the infrared counter data represented a systematic 15% undercount of trail users. It is important to note that the traffic count information presented in the Indiana Trails Study **has not been** adjusted for this 15% undercount.

Traffic Counts

Individual trail counts recorded by the infrared counters were downloaded in the field onto information storage devices and then transferred to laptop computers. The traffic counts from trails in the six (6) subject cities were analyzed using descriptive and frequency statistics for trends, similarities and differences. Significant amounts of information were generated for each subject city and corresponding trail, which was aggregated to create more general findings. The traffic count data highlights the following summary findings regarding trail use levels.

- Total monthly traffic count by trail
- Average weekday traffic count by trail
- Average weekend day traffic count by trail
- Highest single hour traffic count by trail
- Weekday traffic count by hour of day for each trail
- Weekend traffic count by hour of day for each trail

Chart 1 displays the total monthly traffic count for each trail in the months of September and October 2000. The chart indicates that significant uses of each trail occurred in September, with reduced use in October. The resulting findings indicate that trails do attract consistent use regardless of trail type, location and community; and that as daylight hours are reduced, trail use is generally reduced. It is important to note that the trail counters reported a high of 55,148

events on the Monon Trail in Indianapolis during September 2000 with a low of 5,218 events on the Pennsy Rail Trail in Greenfield during September 2000. While one could assume that each event translates into 1 person using these trails, it is unlikely that this is the case. More probable is that about every 2 events translates into 1 person using the trail based on findings presented in Chart 9. Briefly, this chart indicates that between 81% and 98% of trail users surveyed reported they entered and exited the trail at the same location. This would support the view that the number of trail users is between 50% and 60% of the total trail count for the specified time period. Therefore, the best estimate of trail user visits reported for the project ranged from 27,574 on the Monon Trail to 2,609 on the Pennsy Rail Trail.

Chart 1: Total Traffic Count For Study Cities in September/October 2000

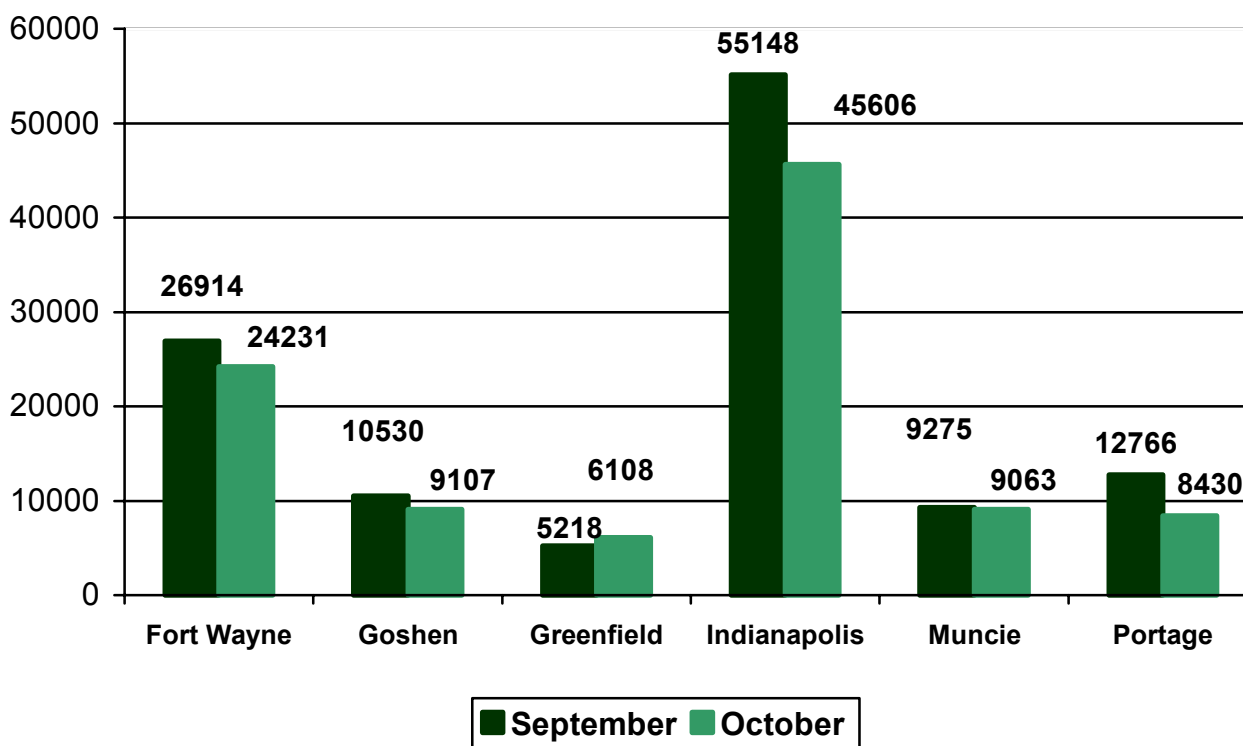


Chart 2: Average Weekday Traffic Count For Study Cities in September/October 2000

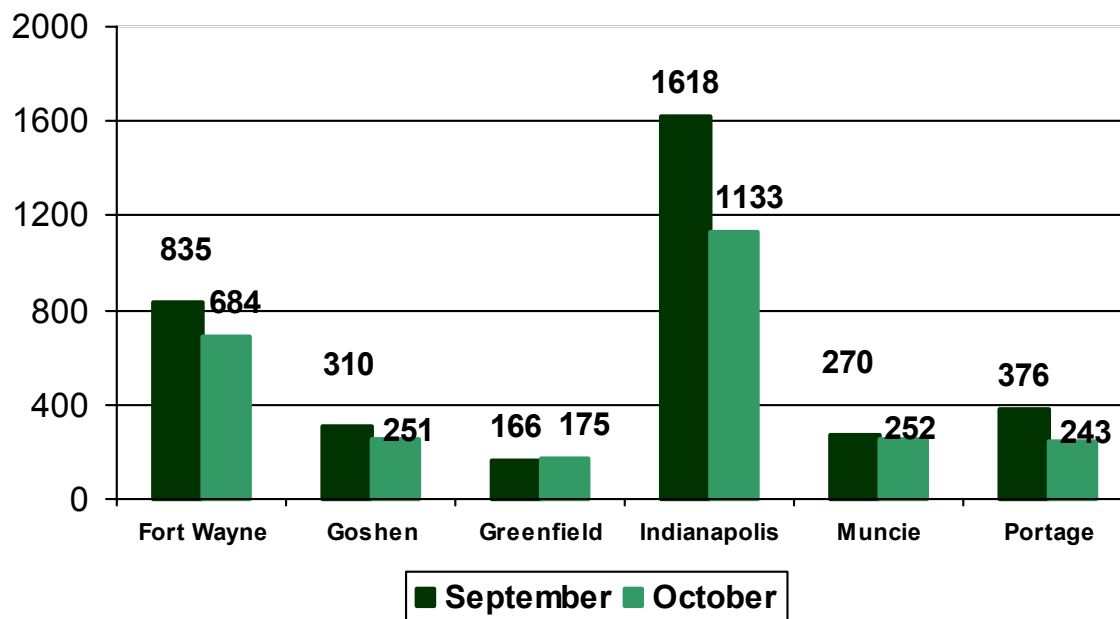
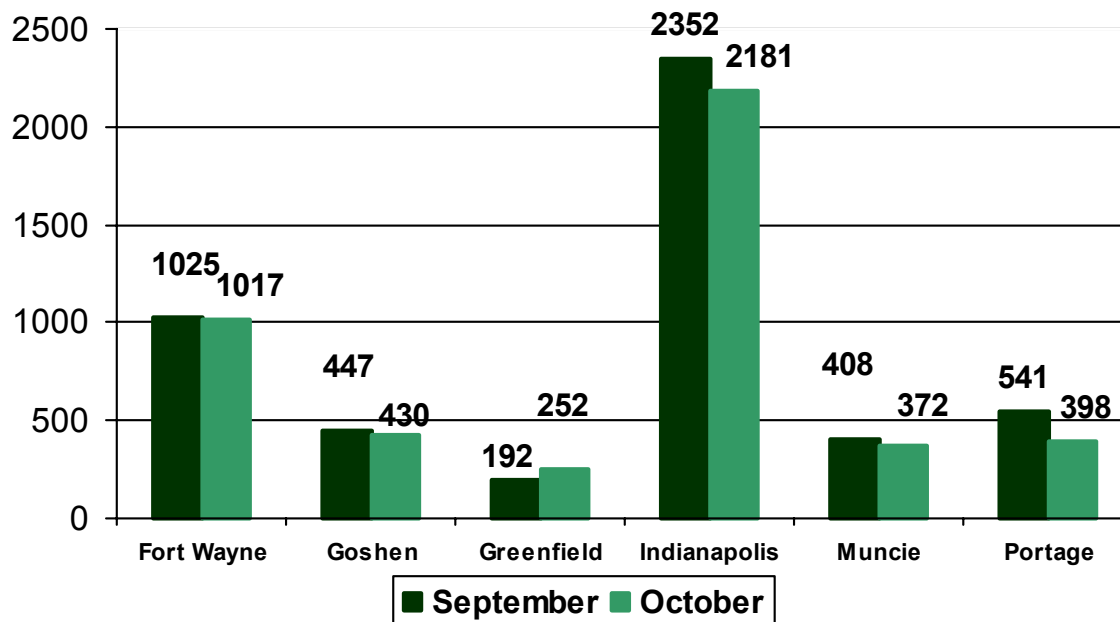


Chart 3: Average Weekend Traffic Count For Study Cities in September/October 2000



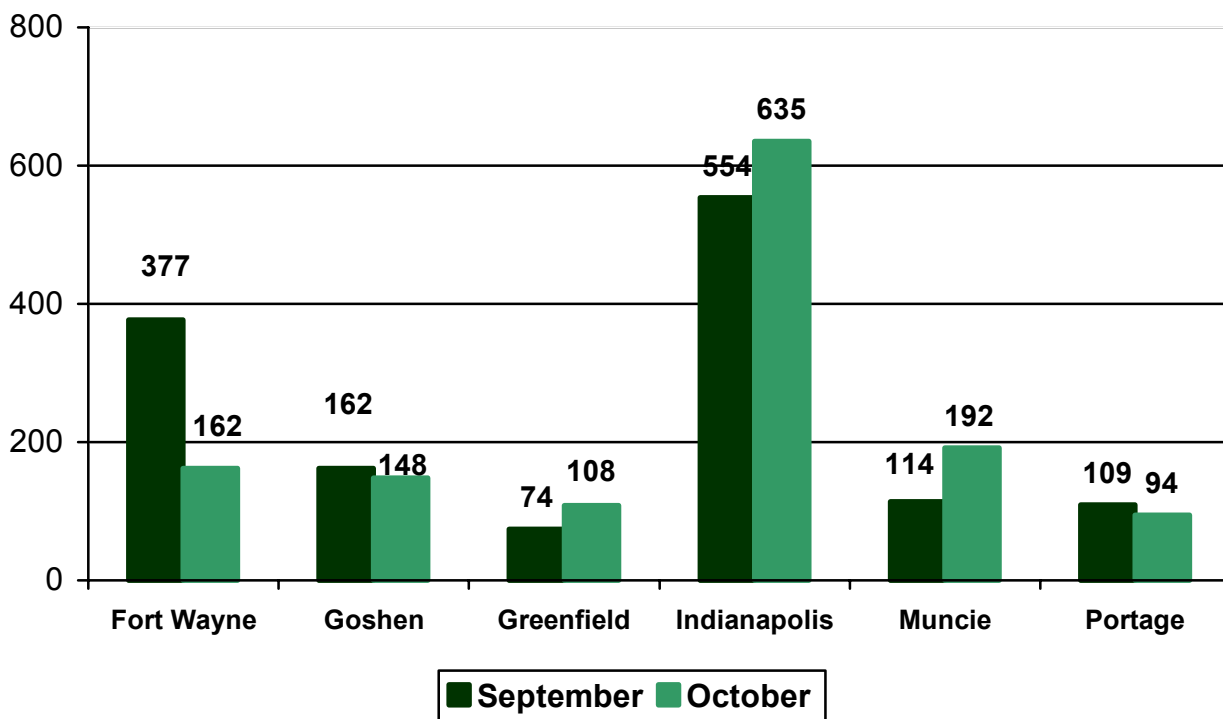
The information displayed in Chart 2 provides an analysis of the amount of weekday traffic for each of the trails studied during the months of September and October 2000. As shown, the daily traffic count ranged from a high of 1618 to a low of 166 events, both in September. A comparison of event counts between September and October generally finds that October events range from 65% to 95% of September events, with an average October event count of 19% less across the six trails. This reduction in trail use is attributed to the reduction in the amount of daylight and/or an increase in cooler weather. It is important to note however, that in all cases, daily events for each site remain at fairly high levels.

Chart 3 shows weekend daily traffic for each of the trails in September and October 2000. Again, it is generally observable that the number of events on each trail was lower in

October in comparison to September. October weekend counts were on average 88% of September counts, and ranged from 76% to 99% of September counts. Trail use levels as measured by events apparently remained more even between October and September in those communities where the trail was more centrally located in an urban community. Specifically, the trail use levels in October, as measured by events, averaged approximately 95% of the September use level in Fort Wayne, Goshen, Indianapolis, and Muncie. In these 4 cities, the trails are located in more urban places.

The highest single hour count of trail events for the study trails in September and October 2000 is depicted in Chart 4. The pattern of highest single counts across communities generally reflects total traffic patterns. Trail use levels past the single point of the trail counter varied from a high of one person

Chart 4: Highest Single Hour Count For Study Cities in September/October 2000

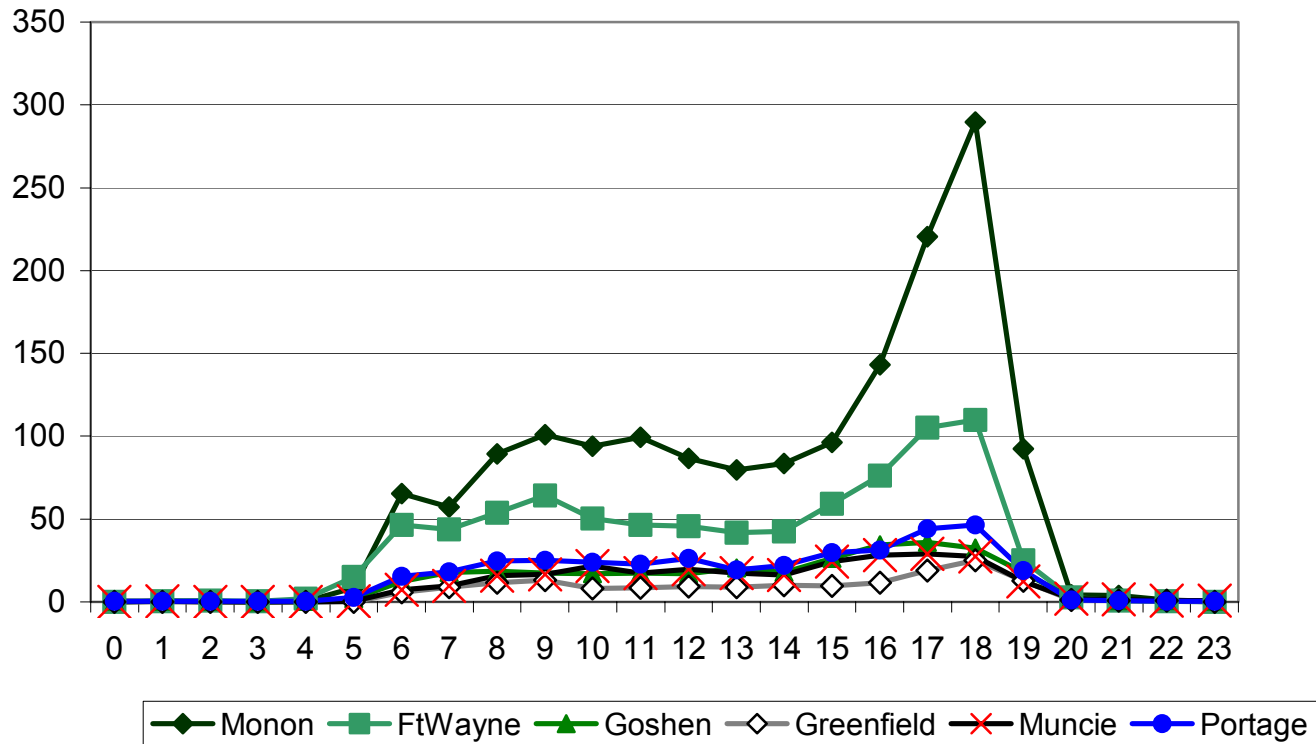


Summary Report

every 6 seconds at the Monon Trail in October, to a low of one person every 49 seconds at the Pennsy Rail Trail in October.

a.m. and rises gradually to approximately 10 a.m. where it decreases slightly and remains consistent until 4 p.m., where it begins to rise

Chart 5: Weekday Traffic by Hour of Day, September 2000



These numbers are significant in that at peak use levels the trails can be considered congested and overcrowded by patrons in a manner that is similar to traffic congestion during rush hours on major streets and highways.

Charts 5-8 display a related analysis of trail “rush” hours as they display hourly rate counts from each of the trails over a 24-hour day. Charts 5 and 6 display hourly rate counts for the 6 trails on weekdays and weekends in September 2000. It is notable that the hourly use pattern for each of the trails follows approximately the same pattern of use with some variations in the intensity of use by location. Generally Chart 5, weekday hourly counts, shows that trail use starts at 6

and peaks during the evening at 6 p.m. This pattern is consistent for almost all trails, and is almost the same when compared to October hourly rate counts for the same 6 trails. The major difference between September and October hourly use is that peak hourly use starts to climb at 3 p.m. in October, and peaks an hour earlier at 5 p.m. in October as depicted in Chart 7. Chart 6 displays weekend hourly use for September 2000. A consistent pattern of higher trail use in the mid-morning, a drop off during the midday hours, followed by an increase to another peak trail use levels between 2 and 5 p.m. can be observed for all trails in September 2000 as depicted on Chart 6. October weekend hourly use as shown in Chart 8 shows a less consistent

Chart 6: Weekend Traffic by Hour of the Day, September 2000

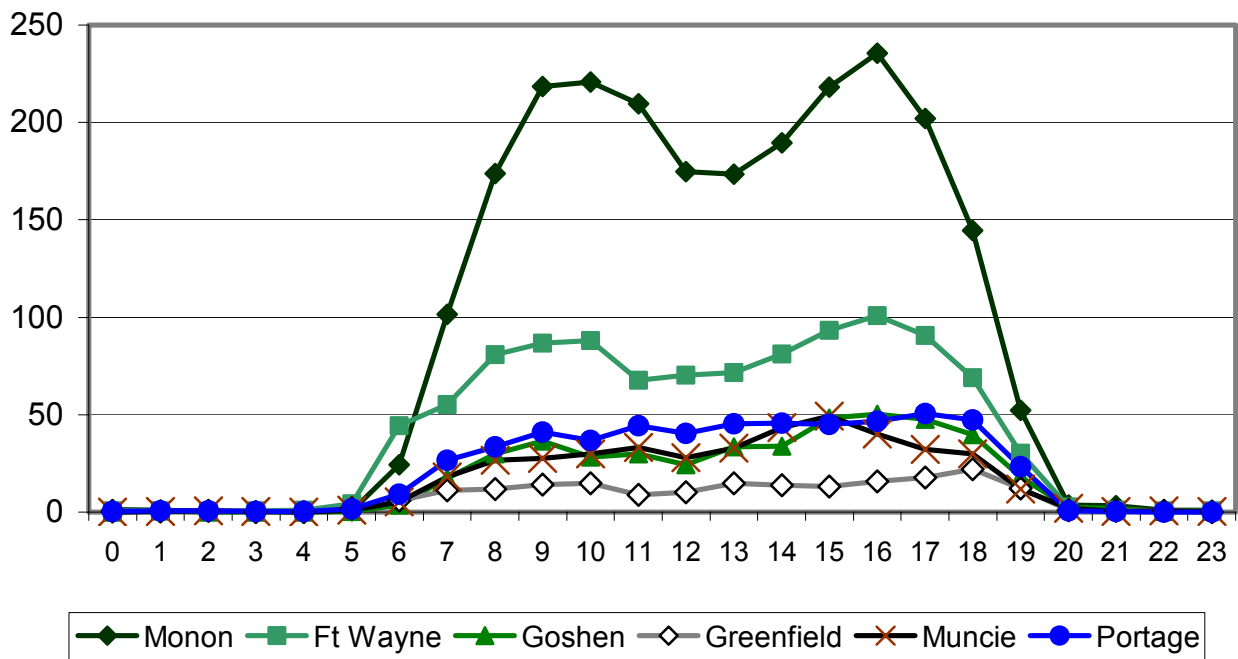


Chart 7: Weekday Traffic by Hour of Day, October 2000

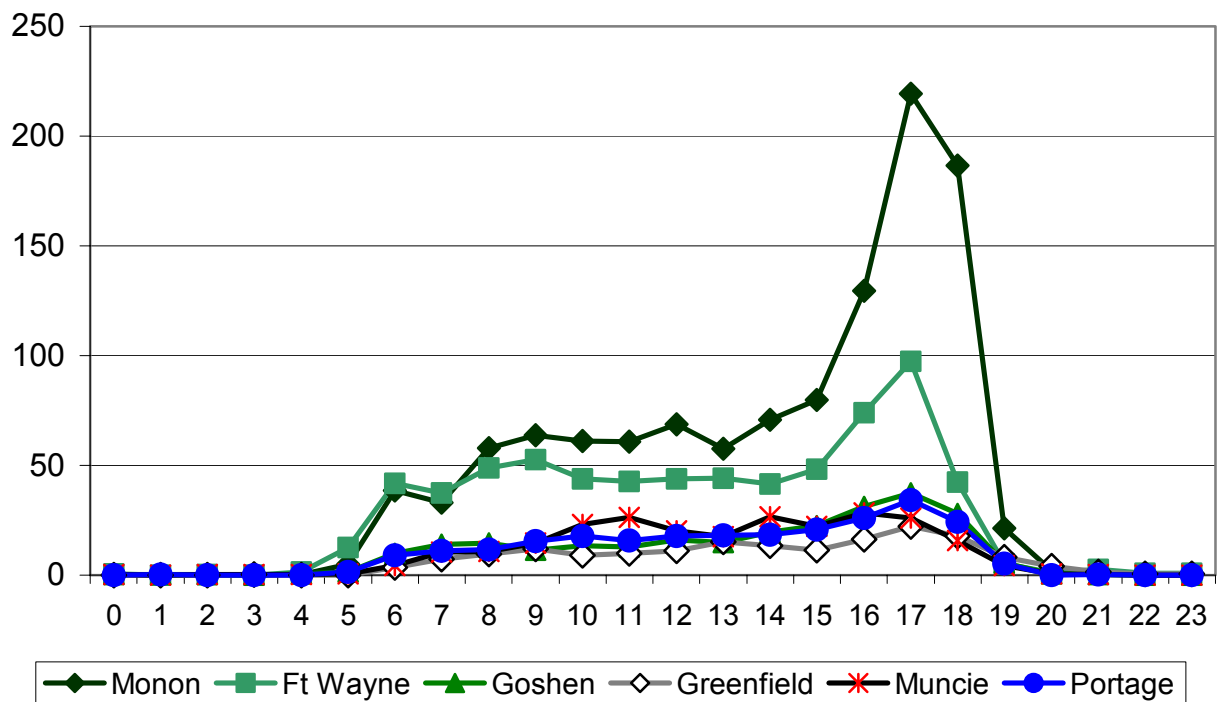
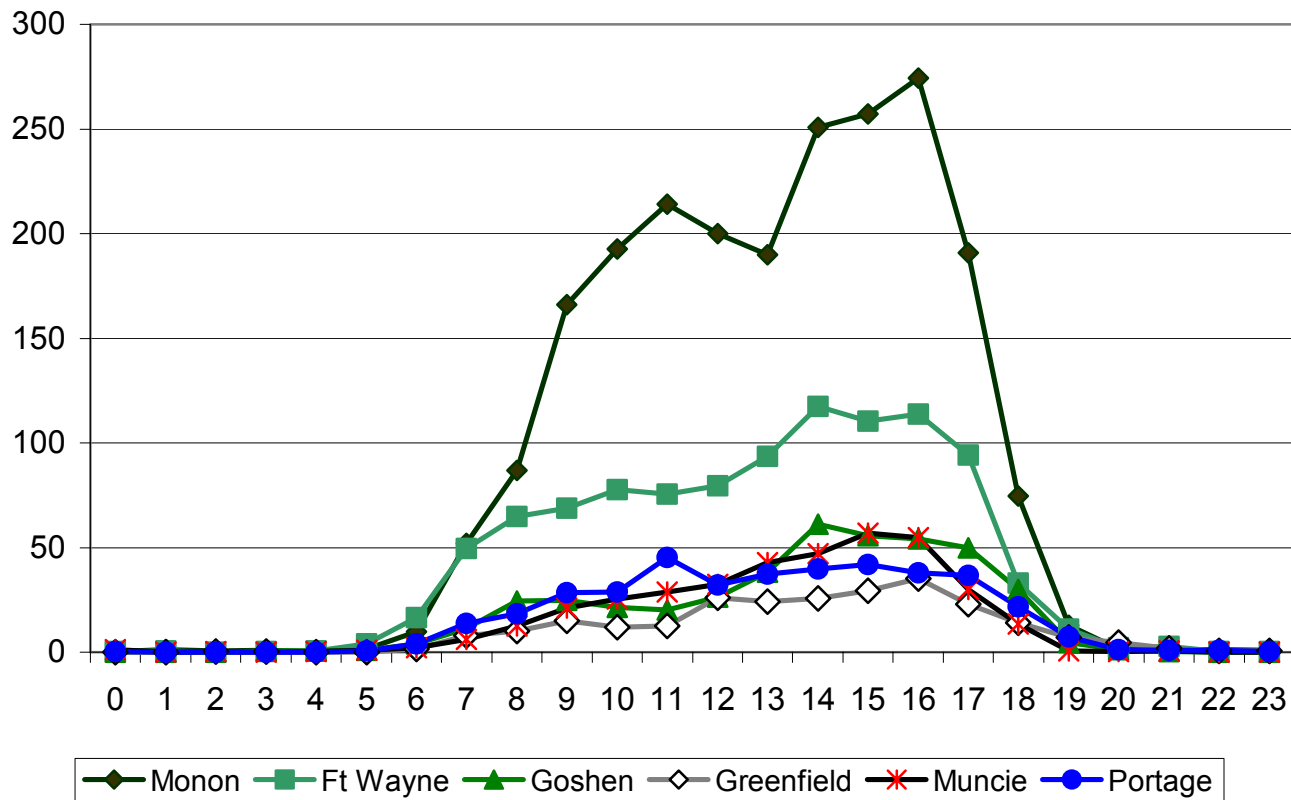


Chart 8: Weekend Traffic by Hour of Day, October 2000



pattern in this regard, but generally supports the same September weekend trail use pattern of increased trail use in mid-morning, dropping off in mid-day and increasing to peak use levels between 2 and 4 p.m.; an hour earlier than in September. Notably, all 4 charts show little, if no trail counter recording of “events” (i.e. trail users) on the trails between 8:00 p.m. and 6:00 a.m. the following morning.

Trail Count Findings

The use of infrared trail counters proved to be successful in the Indiana Trails Study. The counters provided valuable information on trail use patterns; including hourly, daily,

and monthly use patterns by trail, as well as total trail use counts. It is again emphasized that the trail counters recorded only “events”, much the same as traffic counters used by civil and traffic engineers to measure traffic “counts” on a specific stretch of highway. The infrared counters measured only the number of these “events” or trail counts that passed by a specific point along each trail. Analysis of trail counter data found:

- Users were counted every day in the sampling period on every trail. Monthly traffic ranged from 5,200 - 55,000 events at a single counter point (estimated 2,600 – 27,500 user visits)
- Average daily traffic ranged from 96 - 2545 events (by day of week)

- Highest hourly traffic ranged from 74 - 635 events (1 every 49 seconds to 1 every 6 seconds)
- Average weekend daily use exceeds average weekday use (by 37% in September)
- Peak daily use for weekdays was at 5:00 p.m. or 6:00 p.m. in September and earlier in October
- Peak daily use for weekends varied more but peaked in the mid-afternoon to early evening in September; earlier in October
- Peak hourly use is 11%-14% of average daily use

15-item survey. After this approximate 4 minute intercept survey was concluded, survey staff and/or volunteers asked the trail

Figure 3: Infrared Trail Counter Receiver Unit

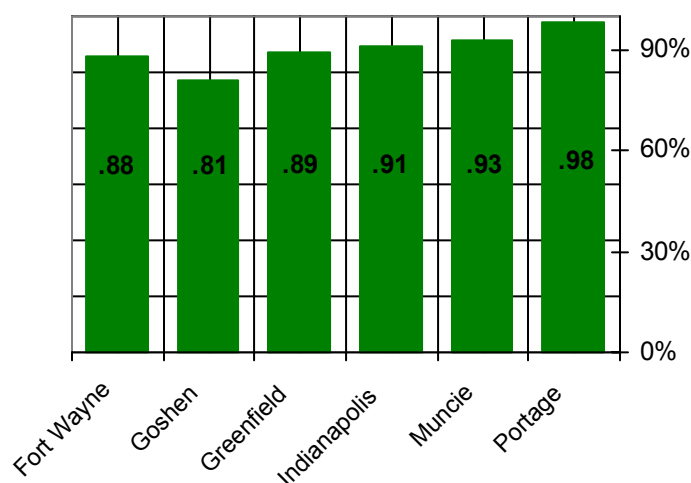


Trail Users

Information about the use patterns, attitudes, and opinions of trail users was gathered in the Indiana Trails Study by “intercepting” users at various times, days and locations on each of the 6 trails studied. Paid staff and/or trained volunteers were stationed at pre-determined locations (generally trail access points) and given specific directions on how to intercept trail users and administer a short

user if they would complete a much longer (15 page) survey at a more convenient time and return it to the Eppley Institute for Parks and Public Lands using business reply mail. Approximately 65% of all intercept users agreed to complete the more in-depth trail user mail back survey. Data received from the trail user intercept and trail user mail back surveys was analyzed separately and reported separately as reported in the Trail Data Summary Tables found in Appendix A.

Chart 9: Trail Users Entering and Exiting at Same Location



Trail Access

Trail access information obtained from trail users centered on factors related to trail entry and exit, distance, and time traveled to and from the trail. Responses from trail users show the average trail user of the 6 trails studied comes from within approximately 5 minutes, and 2 miles of the trail. Chart 9 displays the percentage of trail users who entered and exited the trail at the same location for each of the 6 trails studied. With a range of between 98% and 81% of all trail users entering and exiting at the same location (average of 90%), it is clear that a